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Perception of Teachers on Students' Behavior and Learning Engagement in Science Grade 6

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Abstract

This study examined teachers' perceptions of Grade 6 students' behavior and learning engagement in science classes in the public elementary schools of Aritao 2 District, Schools Division of Nueva Vizcaya. It was guided by the Input-Process-Output Model and theoretical perspectives on multidimensional engagement, self-efficacy, and self-determination. A descriptive survey design was employed among 20 Grade 6 public elementary school teachers selected through simple random sampling. Data were gathered using a researcher-developed questionnaire, classroom observations, and unstructured interviews. Frequency counts, percentage distributions, and weighted means were used to analyze the data. Findings showed that teachers strongly perceived students as generally disciplined, respectful, attentive, curious, and positively behaved during science lessons, with an average weighted mean of 4.30. Students were also perceived as engaged and participative, particularly through enthusiasm, collaboration, attention, and task completion, although participation in assessments and genuine interest in learning science concepts required improvement. Teaching methods, technology and multimedia resources, classroom facilities, prior knowledge, peer relationships, family support, parental involvement, and student self-efficacy were identified as important influences on behavior and engagement. Teachers' perceptions strongly affected their instructional decisions, including adjustments in teaching pace, methods, hands-on activities, differentiated instruction, classroom management, assessment, and feedback. The study concluded that positive and reflective teacher perceptions contribute to responsive and engaging science instruction. It recommended inquiry-based and hands-on activities, varied assessments, multimedia resources, differentiated instruction, parental and community involvement, professional development, and further research. The study supports Sustainable Development Goal 4 by promoting quality, inclusive, and engaging science education. Its sustainability impact lies in strengthening teaching practices, institutional planning, appropriate technology integration, and long-term student interest in science.

Keywords: Aritao 2 District, Classroom Engagement, Grade 6 Science, Inquiry-Based Learning, Student Behavior, Teacher Perceptions, Teaching Strategies, Technology Integration

1. Introduction

Education supports personal and societal development, while science education develops curiosity, critical thinking, problem-solving skills, and foundational knowledge. At the Grade 6 level, students undergo physical, emotional, and cognitive changes that may affect their behavior, participation, and learning patterns. Teachers play a central role in interpreting these changes and responding through instruction, classroom management, motivation, and differentiated support. This study examines teachers' perceptions of students' behavior and learning engagement in Grade 6 science classes in the

public elementary schools of Aritao 2 District. It seeks to determine how student behavior and participation are perceived, which factors influence them, and how these perceptions shape science teaching strategies and the classroom environment.

Student behavior and learning engagement are closely connected to classroom participation and academic learning. Curiosity, perseverance, cooperation, and active participation can support meaningful science learning, whereas disruptive or disengaged behavior may hinder instruction and student progress. Because Grade 6 learners are transitioning toward adolescence, their developmental needs, personalities, interests, backgrounds, peer relationships, and individual learning differences may be reflected in their classroom behavior and participation. Teachers' perceptions are important because they influence how student actions are interpreted and addressed. These perceptions are shaped by teachers' experiences, training, cultural backgrounds, pedagogical preparedness, professional development, and school environment. Positive and informed perceptions may encourage supportive classroom management, relevant activities, constructive feedback, and opportunities for participation. Misaligned or negative perceptions may contribute to ineffective responses, persistent behavioral concerns, or reduced engagement. Examining teachers' views can therefore reveal the challenges they encounter and the practices they consider effective in promoting interest, participation, and positive behavior in science.

Fredricks et al. (2004) described engagement through behavioral, emotional, and cognitive dimensions. Behavioral engagement concerns participation and attendance, emotional engagement involves interest and enjoyment, and cognitive engagement reflects effort and persistence. These dimensions demonstrate that engagement includes not only visible participation but also students' feelings, motivation, and investment in learning. Bandura's (1997) social cognitive theory explained that self-efficacy and motivation are shaped by experience and environmental interaction. Students who believe they can accomplish learning tasks are more likely to persist and participate, while teachers can strengthen self-efficacy through encouragement, feedback, appropriate challenges, and opportunities for success. Deci and Ryan's (2000) self-determination theory similarly emphasized autonomy, competence, and relatedness as conditions that support intrinsic motivation and engagement. Providing meaningful choices, supportive feedback, and respectful relationships can help satisfy these needs. Kohn's (1993) study cautioned that rewards and punishments may shift students' attention from the value of learning to external consequences, thereby weakening intrinsic motivation. Hennessey and Amabile's (1988) study likewise associated intrinsic motivation with creativity, interest, enjoyment, autonomy, and active engagement. These perspectives support classroom approaches that value student agency, meaningful participation, and encouraging feedback rather than excessive external control. Skinner and Pitzer (2012) emphasized that engagement develops over time and is influenced by students' perceptions of the learning environment and the support they receive from teachers. Linnenbrink-Garcia and Pintrich (2003) found that self-efficacy beliefs are directly associated with engagement and achievement in science. Boaler (2002) showed that student-centered approaches and relevant classroom experiences can strengthen interest and motivation. Hidi and Renninger (2006) further explained that interest develops in phases and can be sustained through meaningful challenges and connections between content and students' lives. Minner et al. (2010) demonstrated that inquiry-based science instruction encourages active participation, curiosity, and conceptual understanding. Collectively, these works indicate that student engagement in science is shaped by motivation, self-belief, instructional design, teacher support, and the quality of the classroom environment.

At the global level, the National Statistical Office (2013) report on PISA 2012 showed differences in student achievement and engagement across countries and associated stronger outcomes with practices that promote motivation, active participation, and positive learning environments. This evidence highlights the importance of studying how classroom experiences and teacher responses influence students' willingness to participate in science. Within the Philippine context, Ladera et al. (2016) found that teachers' perceptions of student behavior influence classroom discipline and instructional decisions. De Guzman (2018) identified perceptions of student attitudes, classroom environment, and teacher preparedness as important factors affecting Grade 6 science engagement. Santos (2019)

similarly reported that teachers' views of student interest and behavior affect their selection of instructional strategies and, consequently, students' engagement. Professional development is also central to effective science instruction. Borko and Putnam (1995) argued for movement from traditional lecture-based teaching toward student-centered approaches that support the cognitive and social construction of knowledge. Darling-Hammond and McLaughlin (1995) observed that conventional in-service training may be ineffective when it does not address actual classroom needs. Baird et al. (1983) and Noh et al. (2004) emphasized that teachers' perceived needs should be understood before training programs are designed, particularly when professional learning is expected to improve classroom management, science pedagogy, and student engagement. Instructional technology can support participation by making abstract scientific processes more visible and accessible. Dalton et al. (1997) showed that models, simulations, and virtual laboratories allow students to explore complex phenomena from different perspectives. Minner et al. (2010) found that multimedia and inquiry-based tools can improve understanding and motivation, including among learners with disabilities or limited access to physical laboratory activities. Cultural and contextual influences are especially relevant in Filipino classrooms. Belen et al. (2017) explained that teachers' perceptions of behavior are shaped by cultural norms and societal expectations. Borko and Putnam (1995) again emphasized the importance of student-centered reform, while Darling-Hammond and McLaughlin (1995) stressed the limitations of professional development detached from teachers' classroom realities. Philippine studies by Angeles et al. (2014) and Cruz (2019) indicated that training is more effective when it responds to specific concerns such as discipline, content mastery, practical science teaching, and technology integration. Angeles et al. (2014) further noted teachers' preference for training that is directly applicable to science classroom situations. Talavera (2020) found that Filipino science teachers viewed multimedia tools and virtual laboratories as useful for making lessons engaging and accessible, although their willingness to use them depended on perceived usefulness and ease of use. Dela Cruz (2018) reported that virtual laboratories and multimedia resources can connect theoretical knowledge with practical application and strengthen student motivation. Digital simulations and virtual dissection tools may also widen participation for students with physical or learning disabilities (Santos, 2019). These findings provide a relevant national foundation for examining teachers' perceptions in the public elementary schools of Aritao 2 District, where local experiences, available resources, and classroom conditions may shape how Grade 6 behavior and engagement are understood.

The study is organized through the Input-Process-Output Model, which presents teaching and learning as an interconnected system. The inputs include the respondents' profiles, teachers' experiences, training, cultural backgrounds, professional preparation, school environment, student characteristics, students' behavior in science, engagement and participation, factors influencing behavior and engagement, and the perceived effects of these conditions on teaching strategies. The process consists of classroom interactions and instructional activities through which teachers observe, interpret, and respond to students. Their perceptions guide the use of encouragement, discipline, classroom management, differentiated instruction, hands-on activities, group work, demonstrations, fieldwork, science investigations, reports, worksheets, audio-visual resources, and other multimedia tools. These responses are intended to establish a positive learning environment, motivate learners, and address behavioral challenges. The expected outputs include increased participation, stronger enthusiasm for science, improved behavior, and better academic achievement. The framework also incorporates feedback through which insights from observed outcomes may guide further improvement in teaching strategies, professional development, classroom resources, and student support. The model therefore explains how teacher-related and student-related conditions interact with classroom practices to shape engagement and learning outcomes.

Existing literature establishes that student engagement is multidimensional and influenced by motivation, self-efficacy, teacher support, instructional methods, cultural expectations, professional preparation, and technology. However, much of the available discussion generalizes across subjects, grade levels, or educational settings. Limited attention has been given specifically to how public elementary school teachers perceive Grade 6 students' behavior and engagement during science lessons. This gap is important because Grade 6 students have distinct developmental and learning

needs, while science requires curiosity, inquiry, participation, and comprehension of concepts that may be abstract or difficult to observe directly. Teachers' interpretations of students' conduct may affect the methods they use, the support they provide, and the classroom climate they establish. The present study addresses this need by focusing on Aritao 2 District and treating teachers' perceptions as a source of practical insight into student behavior, engagement, influencing factors, and instructional responses. The study also recognizes that teachers' experiences are often underrepresented in research. Examining and validating their perceptions can support reflective practice, context-responsive professional development, and collaboration among teachers, administrators, parents, policy makers, and other educational stakeholders. The findings may help identify practical ways to strengthen student participation and interest without claiming to directly measure students' actual behavior or engagement.

The study is most directly aligned with Sustainable Development Goal 4, Quality Education. Its focus on student engagement, positive behavior, effective science instruction, teacher development, inclusive participation, and improved classroom environments supports the provision of meaningful and equitable learning experiences. By examining how teachers interpret and respond to Grade 6 learners, the research may inform strategies that encourage curiosity, active participation, scientific understanding, and sustained interest in learning. The study's attention to professional development, inquiry-based instruction, multimedia resources, and accessible learning activities also supports efforts to improve teaching quality. This alignment remains grounded in the study's educational focus and does not extend to Sustainable Development Goals that are not directly supported by the chapter.

The study contributes to educational sustainability by identifying perceptions and classroom practices that may support lasting student interest, positive behavior, active engagement, and foundational scientific knowledge. Strengthening these areas can help learners develop skills and attitudes that remain relevant to later schooling and lifelong learning. For institutional sustainability, the findings may assist school administrators and educational policy makers in designing responsive programs, teacher training, classroom management support, and science instruction initiatives based on teachers' actual experiences. Such context-sensitive planning can strengthen the continuity and quality of science education within public elementary schools. Technological sustainability is reflected in the appropriate integration of multimedia, simulations, virtual laboratories, audio-visual presentations, and other tools that can make scientific ideas more understandable and accessible. Their value depends on teacher preparedness, perceived usefulness, ease of use, and relevance to classroom needs rather than on technology use alone. The study also has community relevance because effective science education supports the development of scientifically literate, curious, and competent citizens. Parents may benefit from greater confidence in the quality of their children's learning environment, while future researchers may use the study as a basis for examining other grade levels, schools, or educational contexts. Through these contributions, the research supports the sustainability of teaching practice, institutional improvement, inclusive participation, and community learning.

The study examines the respondents' age, gender, civil status, current position, length of teaching experience, highest educational attainment, latest performance rating, and level of training and seminars attended. It investigates teachers' perceptions of Grade 6 students' behavior in science, their levels of engagement and participation, the factors believed to influence behavior and engagement, and the effects of these perceptions on teaching strategies. The study assumes that the respondents' profiles are representative of teachers in the public elementary schools of Aritao 2 District and that teachers perceive student behavior and engagement as factors that influence classroom interaction, management, and instructional decisions. It further assumes that student interest, background, peer influence, developmental characteristics, individual differences, and the classroom environment contribute to variations in behavior and participation. The inquiry is limited to Grade 6 science classes in the public elementary schools of Aritao 2 District, Schools Division of Nueva Vizcaya. It does not cover other grade levels, private schools, or districts outside the identified setting. It focuses on teachers' perceptions and does not directly measure students' actual behavior or engagement through observation or other quantitative procedures. Within these boundaries, the study seeks to produce

context-based insights that can improve science instruction, professional development, classroom support, and future research.

2. Material and methods

2.1 Research Design

The study employed the descriptive survey method to examine teachers' perceptions of students' behavior and level of engagement in Grade 6 science classes. As John W. Best explains, "The descriptive method of research is most appropriate in finding out the status, nature, and characteristics of a subject under study through ample qualification and quantification." This design was selected because it allowed the researcher to describe the existing conditions, identify patterns and relationships, and obtain a clearer understanding of the factors influencing teachers' perceptions. It also provided information that could guide future actions and interventions in science education.

2.2 Locale of the Study

The study was conducted in the Aritao 2 District of the Schools Division of Nueva Vizcaya. Nueva Vizcaya is located in the Cagayan Valley region of Luzon and is composed of 15 municipalities. Its provincial capital, Bayombong, serves as an administrative, educational, and cultural center, while other municipalities contribute to the province's agricultural, commercial, and cultural development. Aritao is one of the municipalities of Nueva Vizcaya. Its history is associated with indigenous settlements, agriculture, trade, cultural traditions, and the development of local governance. Agriculture remains an important part of the municipality's economy. The Aritao 2 District was selected because it includes public elementary schools with Grade 6 teachers directly involved in teaching science and managing students' behavior and classroom engagement.

2.3 Respondents of the Study

The respondents were 20 public elementary school teachers who were teaching Grade 6 in different schools within the Aritao 2 District of the Schools Division of Nueva Vizcaya. Their experiences and perceptions were considered relevant to understanding Grade 6 students' behavior, participation, and engagement during science lessons.

2.4 Sample and Sampling Procedure

The researcher used simple random sampling, a probability sampling technique in which every member of the population had an equal opportunity to be selected. This procedure was used to promote fairness and reduce bias in choosing the 20 Grade 6 teachers. It also helped ensure that the data represented the experiences and perspectives of Grade 6 teachers within the district.

2.5 Research Instrument

The primary instrument was a researcher-developed questionnaire supported by classroom observations and unstructured interviews. These instruments were used through triangulation to cross-check the information obtained from different sources and strengthen the validity of the findings. The questionnaire consisted of two parts. The first part gathered information about the respondents' profiles, while the second part addressed the study's specific research questions concerning student behavior, learning engagement, participation, influencing factors, and teaching strategies. The questionnaire was developed using relevant studies and previous theses. Some items were adopted from earlier research, while others were revised based on the recommendations of the research adviser and experienced teachers who reviewed the instrument for clarity, relevance, and quality. Before its administration, the questionnaire was tried out with selected Grade 4 teachers from other districts. Their feedback was used to refine unclear items and improve the instrument's ability to gather the required information. A Five-Point Likert Scale was used to determine the respondents' level of agreement. Scores from 4.20 to 5.00 were interpreted as Strongly Agree, 3.40 to 4.19 as Agree, 2.60 to 3.39 as Moderately Agree, 1.80 to 2.59 as Slightly Agree, and 1.00 to 1.79 as Disagree. This scoring system enabled the researcher to organize responses and identify patterns in the respondents' perceptions. Classroom observations were conducted during science classes to examine the teaching

environment, available resources, and the manner in which instructional materials were used. Unstructured interviews were also conducted with selected teachers using open-ended questions to clarify and validate their questionnaire responses. These interviews provided additional details about science teaching practices and resource utilization that were not fully captured by the questionnaire.

2.6 Data Gathering Procedure

The researcher first secured permission from the School Division Superintendent through the endorsement of the District Supervisor. After approval was obtained, coordination was made with the school principals regarding the distribution of the questionnaires to the selected respondents. The purpose of the study was explained to the respondents, who were encouraged to provide honest and thoughtful answers. They were given sufficient time to complete the questionnaire. The researcher personally retrieved the completed instruments to ensure that all distributed questionnaires were accounted for. Observations were conducted while the questionnaires were being collected, particularly during science classes. Unstructured interviews with selected teachers were also undertaken to clarify and verify their responses. After data collection, the responses were collated, tallied, organized, computed, analyzed, and interpreted.

2.7 Data Analysis Techniques

Simple frequency count and percentage distribution were used to analyze the respondents' profiles in terms of age, gender, civil status, current position, length of teaching experience, highest educational attainment, latest performance rating, and level of seminars and training attended. Percentage was computed using the formula $P=f/n\times100$, where P represents the percentage, f represents the frequency, and n represents the total number of respondents. The weighted mean was used to analyze the respondents' answers in the information section of the questionnaire and determine their overall level of agreement. It was computed using the formula $WM=\sum fw/N$, where WM represents the weighted mean, f represents the frequency, w represents the weight assigned to each response, and N represents the total number of respondents.

3. Results and Discussion

3.1 Demographic and Professional Profile of Grade 6 Teachers

3.1.1 Age of the Respondents

Among the 20 respondents, seven or 35% were 41 years old and above, five or 25% were 36-40 years old, and four or 20% were 31-35 years old. Two respondents or 10% were 26-30 years old, while another two or 10% were 25 years old and below. The findings show that the respondents represented different age groups, although older teachers comprised the largest proportion. Their age diversity provided perspectives from both experienced and younger educators. Older teachers may have developed a broader understanding of student behavior through prolonged classroom experience, while younger teachers may contribute contemporary approaches and teaching strategies. This range of perspectives strengthened the study's assessment of Grade 6 students' behavior and engagement in science.

3.1.2 Gender of the Respondents

Thirteen respondents or 65% were female, while seven or 35% were male. Female teachers therefore comprised most of the respondents. The predominance of female teachers reflects the composition of the teaching group included in the study. Gender may influence communication styles, classroom management practices, teacher-student interactions, and interpretations of student behavior. Including both female and male respondents nevertheless provided varied perspectives on student engagement and classroom practices in Grade 6 science.

3.1.3 Civil Status of the Respondents

Sixteen respondents or 80% were married, while four or 20% were single. Most of the participating teachers were therefore married. The findings indicate that the respondents differed in their personal circumstances and life stages. Married teachers may draw from accumulated personal and professional experiences when managing classrooms and building relationships with students. Meanwhile, the

participation of single teachers contributed additional perspectives that may be shaped by different responsibilities and priorities. These backgrounds may influence how teachers interpret student behavior and engagement.

3.1.4 Highest Educational Attainment of the Respondents

Seventeen respondents or 85% had earned units in a master's program, two or 10% held bachelor's degrees, and one or 5% had completed a master's degree. None of the respondents had obtained a doctoral degree. The results indicate that most respondents had pursued graduate-level education beyond their bachelor's degrees. Their continued academic development may expose them to updated pedagogical approaches, educational research, classroom management practices, and strategies for improving science instruction. The findings also emphasize the importance of sustained professional and academic development in strengthening teachers' capacity to address student behavior and engagement.

3.1.5 Length of Teaching Experience

Six respondents or 30% had taught for 21 years or more. Five or 25% had 1-5 years of teaching experience, while another five or 25% had taught for 6-10 years. Two respondents or 10% had 11-15 years of experience, and two or 10% had taught for 16-20 years. The distribution reflects a combination of beginning, mid-career, and highly experienced teachers. Those with more than 20 years of service may contribute established classroom management and engagement practices, while less experienced teachers may be more receptive to new technologies and instructional methods. This variation allowed the study to capture perceptions shaped by different levels of professional experience.

3.1.6 Latest Performance Rating

Sixteen respondents or 80% received an outstanding performance rating, while four or 20% received a very satisfactory rating. None were rated satisfactory, fair, or poor. The results indicate that all respondents received ratings within the two highest performance categories. These ratings suggest a teaching group with demonstrated competence and commitment to its professional responsibilities. Strong performance may support teachers' confidence in delivering science instruction, managing classroom behavior, and selecting strategies that encourage student engagement. However, the concentration of ratings at the upper levels should be considered when interpreting the respondents' perceptions of their instructional effectiveness.

3.1.7 Seminars and Training Attended

All 20 respondents or 100% had attended school-level and division-level seminars and training. Eight or 40% had participated at the regional level, five or 25% at the national level, and two or 10% at the international level. The results demonstrate that professional development was most accessible at the school and division levels, while participation declined at broader levels. Regional, national, and international activities may provide teachers with additional exposure to specialized knowledge, innovations, and educational practices. Overall, the respondents showed active participation in professional development, although opportunities for wider national and international exposure remained limited.

3.2 Teachers' Perceptions of Grade 6 Students' Behavior and Engagement in Science

3.2.1 Students' Behavior During Science Lessons

Teachers strongly agreed that Grade 6 students generally demonstrated positive behavior in science, as shown by the average weighted mean of 4.30. Attentiveness and focus during demonstrations and experiments received the highest weighted mean of 4.76, followed by curiosity and enthusiasm for science topics at 4.72. Respect for teachers and classmates obtained 4.70, acceptable discipline received 4.55, adherence to classroom rules and routines obtained 4.52, and positive social behavior received 4.50. Emotional management obtained 4.35, responsibility for learning received 4.18, and behavior reflecting interest in science obtained 4.15. Disruptive behavior received the lowest weighted mean of 2.60 and was interpreted as moderately agree. The findings indicate that teachers generally viewed students as disciplined, respectful, attentive, and interested during science lessons. The particularly

high ratings for demonstrations and experiments suggest that practical science activities effectively captured students' attention and curiosity. Although disruptive behavior was observed to some extent, it was not perceived as the strongest characteristic of the learners. The results support the continued use of interactive and inquiry-oriented strategies within a respectful and well-managed classroom environment.

3.2.2 Students' Engagement and Participation in Science

Teachers agreed that students were generally engaged and participated in Grade 6 science, with an average weighted mean of 4.13. Enthusiasm and interest in science lessons received the highest weighted mean of 4.80. Effective peer collaboration during science projects obtained 4.55, while attention and sustained engagement throughout lessons received 4.50. Timely completion of assignments and tasks obtained 4.30, initiative in exploring topics beyond classroom requirements received 4.18, and asking questions about science topics obtained 4.15. Willingness to take risks and try new approaches during experiments received 4.10, while active participation in discussions and activities obtained 4.05. Participation in science assessments received 3.30, and genuine interest in learning science concepts obtained 3.36, both interpreted as moderately agree. The results show that students' engagement was most evident through enthusiasm, collaboration, attention, and completion of classroom tasks. Their willingness to work with peers and attempt new approaches indicates a supportive environment for cooperation and scientific inquiry. However, lower ratings for assessment participation and genuine interest in learning concepts suggest that visible enthusiasm during activities may not always extend to evaluation tasks or deeper intrinsic interest. Teachers may therefore need to sustain engagement through student-led inquiry, varied assessment approaches, meaningful activities, and opportunities that connect scientific concepts with students' experiences.

3.2.3 Factors Influencing Student Behavior and Engagement

Teachers strongly agreed that several interconnected factors influenced student behavior and engagement, as indicated by an average weighted mean of 4.48. Teaching style and methods received the highest weighted mean of 4.75, followed by the use of technology and multimedia resources at 4.70. Classroom environment and facilities obtained 4.60, prior knowledge and experiences received 4.58, and science-related extracurricular activities obtained 4.55. Peer relationships received 4.40, while personal attitudes and self-efficacy beliefs obtained 4.35. Family background received 4.32, the relevance of science topics to daily life obtained 4.30, and parental involvement received 4.26. All factors were interpreted as strongly agree. The findings identify teaching practices as the most influential factor in promoting students' behavior and engagement. Technology, multimedia resources, appropriate facilities, and prior learning experiences were also perceived as important in making science understandable and interesting. The results further show that engagement is shaped by social, personal, and family-related conditions. A comprehensive approach involving responsive teaching, relevant content, supportive relationships, suitable resources, extracurricular opportunities, parental involvement, and the development of student self-efficacy may therefore strengthen science participation and positive classroom behavior.

3.2.4 Influence of Teachers' Perceptions on Science Teaching Strategies

Teachers strongly agreed that their perceptions of student behavior and engagement influenced their teaching strategies, with an average weighted mean of 4.44. Providing independent learning opportunities when students were perceived as confident received the highest weighted mean of 4.85. Adjusting the teaching pace according to student engagement obtained 4.80, while modifying teaching methods when students appeared disengaged received 4.70. The inclusion of hands-on activities based on students' interest obtained 4.60, and adjustments to assessment and feedback received 4.55. Differentiated instruction obtained 4.40, while assigning more challenging tasks to motivated students received 4.30. The influence of beliefs about student motivation on activity selection received 4.15, greater emphasis on classroom management when students were perceived as disruptive obtained 4.05, and the influence of student behavior on science lesson management received 3.95. The findings demonstrate that teachers adapted multiple aspects of instruction according to their interpretations of students' confidence, motivation, behavior, and participation. These adjustments included changing

the pace and method of instruction, providing independent or challenging tasks, incorporating hands-on activities, differentiating lessons, managing classroom behavior, and modifying assessment and feedback practices. The results emphasize the importance of reflective teaching because teachers' perceptions directly guide the opportunities and support offered to learners. Accurate and constructive perceptions may promote responsive, inclusive, and motivating science instruction, while unfavorable or inaccurate perceptions may limit students' learning opportunities.

4. Conclusion & Recommendations

The study concluded that teachers generally perceived Grade 6 students as disciplined, respectful, attentive, curious, and engaged in science lessons. Students showed strong enthusiasm, collaboration, and participation, although their involvement in assessments and intrinsic interest in science concepts required further improvement. Teaching methods, technology, classroom conditions, prior knowledge, social relationships, family support, and students' attitudes influenced their behavior and engagement. Teachers' perceptions also shaped their instructional decisions, including classroom management, teaching pace, hands-on activities, independent learning, differentiated instruction, assessment, and feedback. Positive and reflective perceptions therefore contributed to a supportive, responsive, and engaging science learning environment.

Teachers should maintain positive perceptions of students' abilities and use hands-on experiments, group activities, inquiry-based learning, multimedia resources, and relevant science activities to sustain curiosity and participation. They should establish respectful and collaborative classrooms, differentiate instruction according to students' needs, provide opportunities for choice and independent learning, and employ varied assessment techniques that encourage continuous learning. Parents and community members should also be involved in science-related activities, while teachers should regularly reflect on their perceptions and practices and participate in professional development focused on effective science instruction. Further studies related to student behavior and engagement in science should also be conducted.

The study was limited to the perceptions of Grade 6 teachers in public elementary schools within the Aritao 2 District, Schools Division of Nueva Vizcaya. It did not include teachers from other grade levels, private schools, or districts outside the identified locale. Its findings were based primarily on teachers' interpretations of students' behavior and engagement and therefore did not represent a direct measurement of the students' actual behavior and engagement across broader educational settings.

5. Compliance with ethical standards

The study observed the required administrative procedures by securing permission from the School Division Superintendent through the endorsement of the District Supervisor and coordinating with the school principals before data collection. The purpose of the study was explained to the respondents, who were encouraged to provide honest responses and were given sufficient time to complete the questionnaire. The manuscript did not indicate approval from an institutional ethics review board or explicitly state that written informed consent was obtained.

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